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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Joseph P. Meehan

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS

P.O. BOX 3001

BRIARCLIFF MANOR, NY 10510

EXAMINER

TRAN, KHANH C

ART UNIT

PAPER NUMBER

2631

DATE MAILED: 08/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/873,567

Applicant(s)

MEEHAN ET AL.

Examiner

Khanh Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2 and 4-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-10 and 17 is/are allowed.
- 6) ☒ Claim(s) 2,4-6,11,15,16 and 18 is/are rejected.
- 7) ☒ Claim(s) 12-14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

1. The Amendment filed on 03/15/2005 has been entered. Claims 2 and 4-18 are pending in this Office action.

Response to Arguments

2. Applicant's arguments with respect to claims 2 and 4-18 have been considered but are moot in view of the new ground(s) of rejection.

3. The objection of claims 7 and 17-18 has been withdrawn after Applicants amended claims to correct all informalities.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 2, 4, 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Lawrence et al. U.S. Patent 5,694,419.

Regarding claim 2, figure 5 illustrates a vestigial-sideband (VSB) demodulator 500 including a timing recovery loop. In column 8 line 50 via column 9 line 30,

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a timing recovery control signal 585 is applied to control a variable oscillator (VCXO--not specifically shown) to produce a stream of clock pulses occurring at the symbol rate, and a multiple (e.g., 2X) thereof, for synchronized sampling. These clock pulses are applied to any associated circuitry situated upstream of the demodulator, such as an analog-to-digital (A/D) converter, and/or downstream thereof. In view of that, the A/D converter corresponds to the claimed sample rate converter.

The VSB demodulator 500 includes an Equalizer 560, corresponding to the claimed forward equalizer, for generating an equalized feedback signal based on the symbol stream at the second sampling rate as claimed in the application claim.

The VSB demodulator 500 further includes a timing recovery circuit 580 for generating the timing recovery control signal 585 based upon the equalized feedback signal.

The VSB demodulator 500 further includes a carrier recovery to base band circuit 540 electrically coupling the A/D converter to the equalizer 560.

Regarding claim 4, the VSB demodulator 500 further includes a vestigial Nyquist filter 550, which is preferably a multi-tap finite-impulse-response (FIR) filter; see column 4, lines 45-55. The vestigial Nyquist filter 550 is electrically coupling the carrier recovery circuit to the Equalizer 560.

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Regarding claim 16, claim 16 is rejected on the same ground as for claim 2 because of similar scope. Claim 2 claims a timing recovery loop having elements to perform the steps in claim 16.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lawrence et al. U.S. Patent 5,694,419 in view of Bernard Sklar, "Digital Communications Fundamentals and Applications".

Regarding claim 5, Lawrence et al. does not teach the Nyquist filter 550 is a square-root raised cosine filter as claimed.

Bernard Sklar discloses in the textbook "Digital Communications Fundamentals and Applications" on pages 100-103 that a square-root raised cosine filtering is frequently used in Nyquist filter. Because of the excellent characteristic of square-root raised cosine function for pulse shaping to reduce intersymbol interference, it would have been obvious for one of ordinary skill in the art at the time of the invention that Lawrence et al. Nyquist filter can be modified to be square-root raised cosine Nyquist filter.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lawrence et al. U.S. Patent 5,694,419 in view of Cranor et al. U.S. Patent 6,911,947.

Regarding claim 6, Lawrence et al. does not teach a plurality of antennas including N timing recovery loops as set forth in the application claim.

Cranor et al. invention is directed to a plurality of antenna elements receive spatially unique replicas of a desired television signal. The spatially unique replicas are coupled to an adaptive combiner, which generates a spatially combined signal to be coupled to a television receiver; see column 1, lines 45-65.

In column 2, lines 25-60, fig. 1 depicts a block diagram of an apparatus 100 for reducing multipath distortion in a television signal. The apparatus 100 comprises a plurality of antenna elements 106 (e.g., four are shown), an adaptive combiner 102, and a television receiver 104. The antenna elements 106 receive an RF signal corresponding to a desired terrestrially broadcast television channel selected from a plurality of channel locations in a frequency band. The RF signals corresponding with broadcast channels are analog and digital television signals. The analog signal may comprise a conventional National Television Standard Committee (NTSC) modulated signal within the United States. The digital television signal may comprise a Vestigial Sideband (VSB) modulated signal in compliance with the Advanced Television Systems Committee (ATSC) standard A/53, for example, a high definition television (HDTV) signal. The system described herein could also be configured to function with other formats, such as European, by appropriate changes in the input section of the system. Each antenna element 106 receives a spatially unique replica of the desired television

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signal (i.e., a replica of the television signal having a unique amplitude and phase associated with the angle of incidence). Each spatially unique replica is coupled to the adaptive combiner 102 for spatial processing.

7. Claims 11, 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Langberg et al. U.S. Patent 5,703,905.

Regarding claim 11, Langberg et al. invention is directed to a timing recovery system for use in a multi-channel receiver. Figure 1 shows a portion of a transmitter-receiver (transceiver) system including channel A and channel B.

In column 4, lines 1-16, the receiver include A/D converter 103a (for channel A) and A/D converter 103b (for channel B), which correspond to the claimed sample rate converters, each receiving an symbol stream at a first sampling rate and converting it to a symbol stream at a second sampling rate.

The receiver further comprises adaptive equalizers 10a and 10b, each includes a feed forward equalizer; see column 5, line 14 via column 6, line 50; see also figure 2. Langberg et al. does not expressly teach the equalizers 10a and 10b generating equalized feedback signals as claimed in the application claim. Nevertheless, in column 10, lines 5-11, the timing signals input to timing recovery circuit 107 were derived from band-edge filters coupled to each channel receiver input. However, it should be evident that data derived frequency and phase signals usable to control the timing recovery circuit may be derived from other circuits (e.g., adaptive equalizers). In light of the foregoing suggestion, it

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would have been obvious for one of ordinary skill in the art at the time of the invention that Langberg et al. receiver can be modified to implement that the timing signals input to timing recovery circuit 107 were derived from adaptive equalizers 10a and 10b instead.

A signal responsive means may be coupled to each input means of the receiver for producing separate timing signals, one timing signal per channel, each timing signal being indicative of the frequency and phase of the signals received at its channel input means. The two separate timing signals are then coupled to a controllable gating means for selectively coupling a selected one of the two timing signals to an adjustable clocking circuit which produces sampling signals corresponding to the timing signals applied thereto; see column 1 line 65 via column 2 line 10.

Regarding claim 15, the receiver in figure 1 further shows a channel select 155.

Regarding claim 18, claim 18 is rejected on the same ground as for claim 11 because of similar scope.

Allowable Subject Matter

8. Claims 12-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Claims 7-10 are allowed.

Regarding claim 7, the claim is allowed over prior art of record because the cited references do not teach or suggest, "a timing recovery circuit generating the TR control signal based upon the N equalized feedback signals" as claimed in the instant application.

10. Claim 17 is allowed.

Regarding claim 17, the claim is allowed over prior art of record because the cited references do not teach or suggest, "producing the TR control signal based on the combined equalized feedback signal" and "applying the TR control signal to the sample rate converters to thereby permit the N sample rate converters to output N symbol streams at the controlled sample rate" as claimed in the instant application.

Conclusion

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11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Olafsson U.S. Patent 5,870,438 discloses "Fast Resynchronization System For High-Speed Data Transmission.

England U.S. Patent 6,901,123 B2 discloses "Multi-Panel Phased Array Antenna, Employing Combined Baseband Decision Driven Carrier Demodulation".

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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08/18/2005

Examiner

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